

Changkat Changi Secondary School
Physics Department
Upper Secondary

Name: _____ () Class: _____ Date: _____

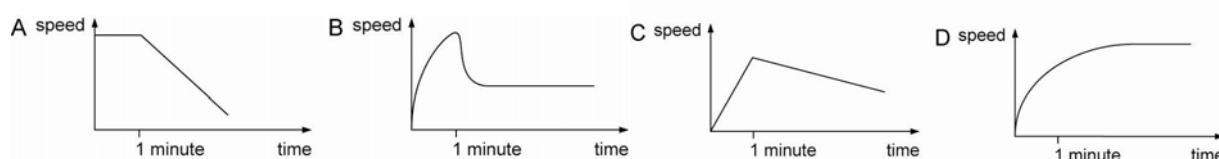
TOPIC : Kinematics

WORKSHEET 2.3

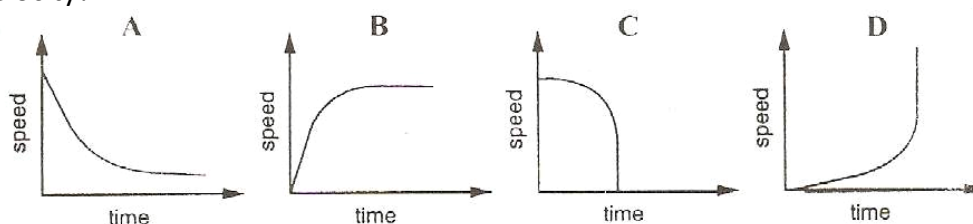
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A. MULTIPLE CHOICE QUESTIONS (7 marks)

1. A ball falls freely (with no air resistance) near the surface of Earth. What quantity remains constant?
A Acceleration
B Distance travelled in 1 s
C Speed
D Velocity ()
2. A bag of sand was dropped from a stationary hot air balloon at a height of 200 metres. Which statement best describes the fall of the sand to the ground?
A The speed increases uniformly all the way.
B The speed increases and then remains constant.
C The speed remains constant all the way.
D The speed decreases and then remains constant. ()
3. An object is falling under gravity with terminal velocity. What is happening to its speed?
A It is decreasing to a lower value.
B It is increasing.
C It is decreasing to zero.
D It is staying constant. ()
4. A parachutist falls for 2 minutes. After 1 minute, his parachute opens. Which is the best speed-time graph to describe his motion?

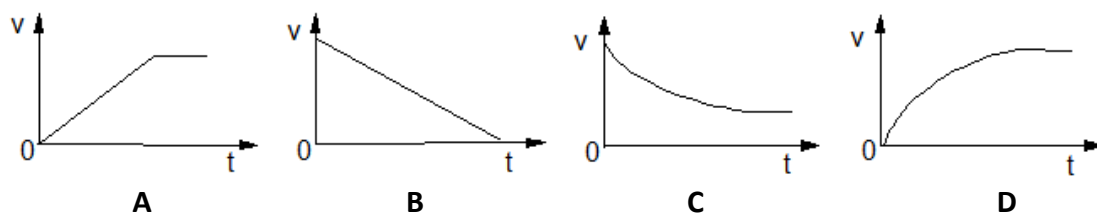


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5. Which graph represents the motion of a body falling vertically that reaches a terminal velocity?



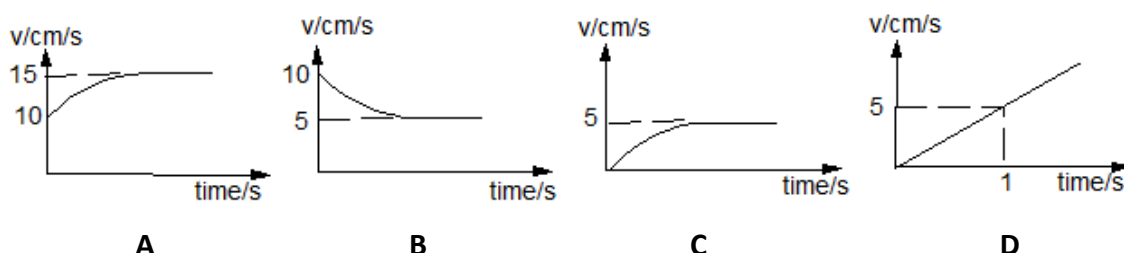
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6. A body falls vertically through air from rest until it reaches terminal velocity. Which graph shows how the speed of the body changes with time?



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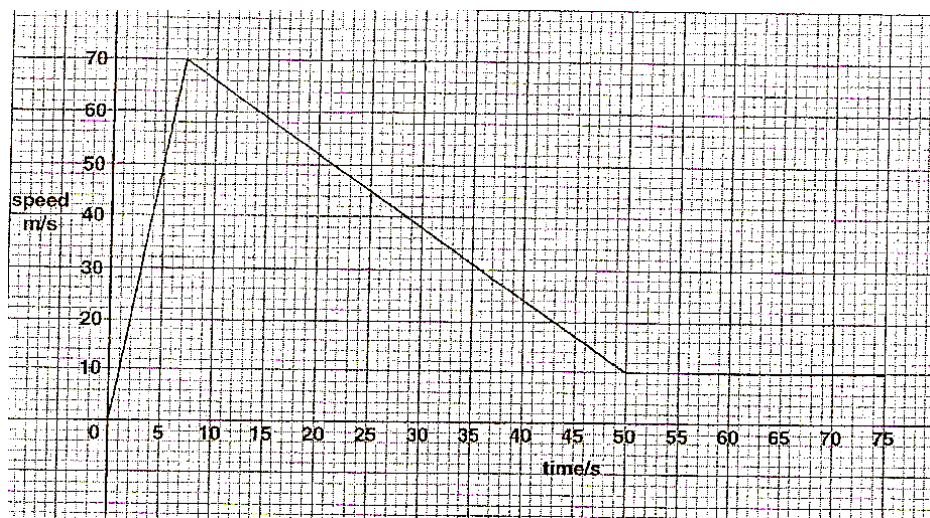
7. A ball-bearing was found to have a terminal velocity of 5 cm/s when falling through water. If it is thrown into the surface of the water with an initial velocity of 10 cm/s, which of the following shows the possible velocity-time graph of the ball-bearing?



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B. STRUCTURED QUESTIONS (11 marks)

8. A sky diver jumps from an plane He free falls for a time and then opens his parachute. The following sketch graph shows the speed time graph as he falls.



- (a) At what time was the parachute opened? _____ [1]
- (b) Calculate the sky diver's acceleration up to the time he opened his parachute.
(recall: *acceleration = grad. of line*) [2]
- (c) How far did he fall between 50 to 75 s? (recall: *distance = area under speed time graph*) [2]

9. A parachutist jumps from an aircraft and falls through the air. After some time, he opens the parachute.

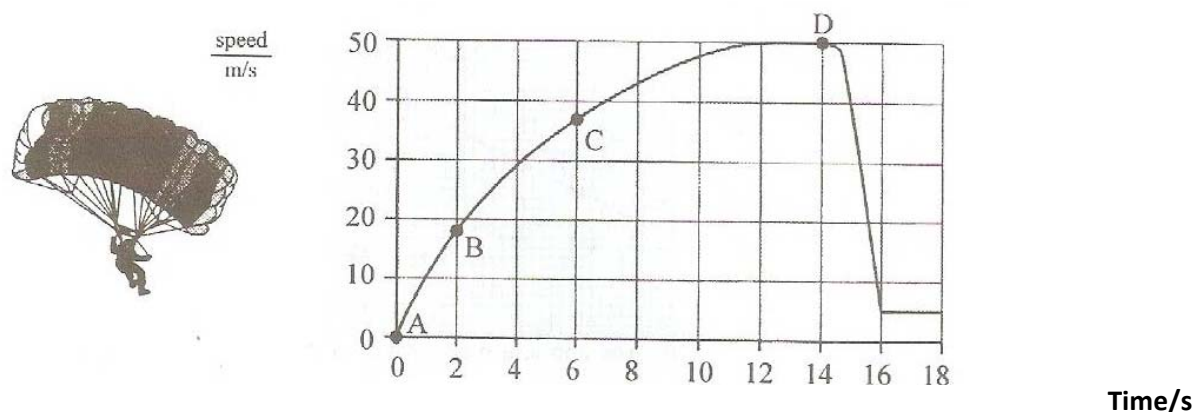


Fig. above shows how the speed of the parachutist varies with time.

- (a) Describe the motion of the parachutist between A and D. [3]

A to B— _____
 B to C— _____
 C to D-- _____

- (b) State the value of the terminal velocity before and after the parachute opens. [2]

Before parachute opens, terminal velocity= _____

After parachute opens, terminal velocity = _____

- (c) Estimate his height in the last 2 seconds. (*recall- distance equals to area under speed time graph*) [1]